Author’s response to reviews

Title: Factors associated with the goal of treatment in the last week of life in old compared to very old patients: a population-based death certificate survey.

Authors:

Tinne Smets (tinne.smets@vub.ac.be)
Rebecca Verhofstede (rebecca.verhofstede@vub.ac.be)
Joachim Cohen (joachim.cohen@vub.ac.be)
Nele Van Den Noortgate (Nele.VanDenNoortgate@uzgent.be)
Luc Deliens (luc.deliens@vub.ac.be)

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Author’s response to reviews: see over
## RESPONSE TO THE REVIEWERS’ COMMENTS

### MANUSCRIPT MS 1858315275110440

“Factors associated with the goal of treatment in the last week of life in older patients: a population-based death certificate survey”

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<th>Comments of the reviewers</th>
<th>Response of authors</th>
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<td><strong>Reviewer’s report:</strong> The study aims to provide an evaluation of the main goal of treatment in the last week of life of people aged 85 and older compared with those between 75 and 85 and to examine how treatment goals are associated with age. There is a good rationale for the study. The findings are clearly presented and reiterate what is already well documented in the literature about this age group. The comparison between the younger and older age groups is useful and adds to what is known. Overall this paper contributes to the literature on dying in old age and provides a useful baseline for future work and discussion about how interventions to improve end of life care for this group could be framed.</td>
<td>We appreciate the reviewer’s positive comments on our work.</td>
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<td><strong>Minor revisions</strong> 1. How was representativeness defined for the sampling of the death certificates?</td>
<td>The selection of deaths and sampling procedure needed to provide a representative sample of all deaths in Flanders in 2007 and had to include a sufficient amount of deaths to yield reliable information on the characteristics of all types of end-of-life practices as this was the primary aim of the survey. Inclusion criteria were: 1) the death taking place in Flanders, 2) the deceased being a resident of Belgium at the time of death, and 3) the deceased being aged one year or more at the time of death. We sampled a fraction of almost 25% of all</td>
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deaths in Flanders in a six month period from June 1st until November 30th 2007. This amounted to 6927 death cases, approximately 12% of all deaths in 2007. The sample is proportioned for month of death and province of death. We also adopted disproportionate sampling of deaths to include more patients with a cause of death known to have a higher likelihood of an end-of-life decision being made. According to the underlying cause of death on the death certificates and the corresponding probability of an end-of-life decision being made deaths were grouped into one of four strata and sampled disproportionately. Data were afterwards weighted to correct for the disproportionate stratification of the underlying causes of death. The influence of non-response on the representativity of the data was subsequently checked and weighted through a comparison of proportionality of underlying causes of death and other patient characteristics (ie. sex, age, educational level, marital status, living situation, province of residence, month of death and place of death) between deaths where responses had been received and deaths within the general population in 2007.

We decided to not add additional details about the study design and sampling procedure as this is already described in detail in a protocol article published in BMC Public Health, to which we refer in our manuscript.1

2. The response rate is impressive. Was any information collected about the survey respondents, e.g. training in end of life care, position held? What was the process of administering the questionnaire, how many questions were asked, were physicians sent reminders and/or given incentives to complete the questionnaires and how long did it take to secure the response rate achieved?

The only information collected about the respondents was their specialty, namely medical specialist or general practitioner.

Every physician who had reported a death was sent a five-page questionnaire. If the physician who received the questionnaire was not the main treating physician, he/she was asked to pass the questionnaire on to the treating physician. To guarantee total anonymity of physicians and patients a lawyer was used as intermediary between responding physicians, researchers, and the Flemish Agency for Care and Health.

We used the Total Design Method to optimise the response rate.2 An intensive follow-up mailing was conducted in cases of non-
response. After the questionnaire was sent out, the physician received a maximum of three reminders at an interval of 14 days until the questionnaire was returned. In the second reminder a new copy of the questionnaire was included, thus anticipating the possibility of the physician having lost the original. After the data collection a one-page questionnaire was sent to all non-responding physicians, asking about their reasons for non-response.

To maximise the gains for physicians, we stressed the importance of the study for the medical field and communicated the results of the study to the respondents. All physicians were assured of an invitation to a seminar on the study after the data collection. Due to the large number of participating physicians, the funds were not sufficient to reward every individual physician financially.

A detailed description of the mailing procedure can be found in the protocol article to which we refer in our manuscript.¹

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<th>3. The study was undertaken in 2007 and the certificates reviewed were from June 1 and November 30. What was the time lapse between the death registration and the physician being asked to comment on the goal of care</th>
<th>Death certificates have to be processed by the proper authorities before they can be made available for research. The delay between the patient’s death and the study of that death has reached as much as four months in our study. We can therefore not exclude some influence of recall bias. To address this issue, we encouraged physicians to fill in their questionnaire using the patient files. We mentioned this in the limitations of our study. Revised manuscript lines 250-254: Finally, the delay between the patient’s death and the study of that death has reached as much as four months in our study as death certificates have to be processed by the proper authorities before they can be made available for research. We therefore cannot exclude the influence of recall bias. However, to address this issue physicians were encouraged to fill in their questionnaire using the patient files.</th>
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<td>4. Data collection was completed almost 7</td>
<td>We have added this to the limitations of our</td>
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years ago; this should be acknowledged as part of the limitations. Have there been any changes in policy and practice in end of life care in the interim?

To the best of our knowledge, there have been no major changes in policy and practice in end of life care between 2007 and 2014.

**Revised manuscript lines 234-235**
The data collection was completed almost seven years ago. End-of-life care practices may have changed in the meantime.

**Discretionary revisions**

1. Some of the suggested explanations for the observed differences between the age groups, whilst reasonable, are wide ranging and go beyond what can be known from the data as presented. Not knowing anything about the events leading up to death apart from an espoused/remembered treatment goal is a constraint. Some of the observations about possible reasons for the findings could be reframed as future research questions.

   We agree with the comment of the reviewer. We acknowledged this weakness in the limitations. As suggested we reframed our explanations as future research questions.

   **Revised manuscript lines 269 and 296**

   Future research should investigate this further.

   It would be interesting to study this further in the future.

2. In a study that considers dying and the oldest old it would have been interesting to see some discussion about what the data showed about the presence of co-morbidities (and their documentation on death certificates)

   On the death certificates, physicians need to certify the cause of death, including the immediate cause of death, the intermediate causes of death which triggered the immediate cause of death, and the underlying causes of death which triggered the chain of events leading to death. Co-morbidity is not directly mentioned on the death certificates although some information about co-morbidity could potentially be derived from the intermediate and the underlying causes of death. However, we found that there were a lot of missing data on these variables, so we could not use this information in our study.

3. As part of the discussion of the findings, do the authors think current debates about the assessment of frailty as opposed to a focus on chronological age have relevance for decisions to treat or provide comfort care?

   We think this is an important debate. Studies indeed show that frailty is superior to chronological age as a predictor of outcomes. While chronological age is an independent risk factor for adverse outcomes in many conditions, the assessment of frailty in elderly patients is emerging as a superior predictor when compared with chronological age. An assessment of frailty would then probably have more relevance for decisions to treat or to provide comfort care than a person’s
chronological age. However, our data are limited in this respect. We did not measure frailty as this was not the main focus of the study. Nevertheless, we acknowledge that information about frailty would have provided important additional information. We therefore mentioned this as a limitation of our study in the discussion section.

Revised manuscript lines 242-245
Additionally, while chronological age is an independent risk factor for adverse outcomes in many conditions, the assessment of frailty in elderly patients may be a superior predictor of outcomes than chronological age in this patient population.

COMMENTS REVIEWER Peter Oster

Reviewer’s report:
Make clear in the abstract, in which group a 85 year old patient is

A 85 year old patient is in the age group of patients between 75 and 85 years. We made this clearer in the abstract.

Revised abstract:
This study aims to provide an evaluation of the main goal of treatment in the last week of life of people aged 86 and older compared with those between 75 and 85 and to examine how treatment goals are associated with age.

COMMENTS REVIEWER Klaus Hager

discretionary revisons:
Some formal points should be changed. In the results chapter table 2 is uncapitalized, whereas table 1 + 3 are written with capital letters.

Then the way of citing should be checked. For example in the “Background” chapter several ways can be found: xx.[] xx or xx. [] xx or xx. [] xx.

We changed these points in the revised manuscript.

minor essential revisions:
1. The title should mention the core question, i.e. if there are differences of treatment goals between old and very old patients. The title might therefore be changed to something like ‘Factors associated with the goal of treatment in the last week of life in old compared to very old patients: a population-based death certificate survey.’

We changed the title as suggested.
old patients: a population-based death certificate survey”

2. In table 1 the mean age of the two age groups should be mentioned

We included the mean age of the two age groups in table 1

3. In the discussion of the capacity and the treatment goal (line 247-250) it should be mentioned that there may be a selection bias, because from 1,242 of the 1,681 patients the data were missing.

We agree that there may be a selection bias and have therefore deleted the sentence about capacity and treatment goal in the discussion.

4. The authors should add a short comment at the end of the discussion concerning the possible consequences of their results, for example that better instruments should be developed to help the treating physicians to define the point when curative treatment should be abandoned, especially in non-malignant diseases or that the principles of comfort therapy should be integrated into the daily decision making, especially in hospital.

We added a sentence at the end of the discussion where we mention a possible consequence of the results.

Revised manuscript lines 320-321

The principles of comfort therapy should be integrated into the daily decision making, especially in hospital.

Reference list accompanying responses to comments

